



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/781,369

02/18/2004

Timothy E. Cooper

P187-US

2772

50905

7590

06/01/2005

N. KENNETH BURRASTON

KIRTON & MCCONKIE

P.O. BOX 45120

SALT LAKE CITY, UT 84145-0120

EXAMINER

TANG, MINH NHUT

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/781,369

Applicant(s)

COOPER ET AL.

Examiner

Minh N. Tang

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 2 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference number "202b" in Figs. 2A-2C; reference number "1212" in Fig. 12; and reference number "1306" in Figs. 13a-13C. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "636" has been used to designate both "the terminals" and "the tips" (see Applicants' specification page 6, paragraph [0029], line 6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the

Art Unit: 2829

sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
 - a/ on page 2, paragraph [0006], line 12, "204" should be -- 220 --.
 - b/ on page 6, paragraph [0032], line 2, "408" should be -- 406 --.
 - c/ on pages 6-7, paragraph [0032], line 13, "524", and "508" should be -- 424 --, and -- 408 --, respectively.
 - d/ on page 7, paragraph [0035], line 3, "probe tip 638" should be -- probe tip 636 --.
 - e/ on page 8, paragraph [0036], line 7, "case" should be -- cause --.Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

5. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claims 2, 6, and 18-20 are objected to because of the following informalities:

Art Unit: 2829

a/ in claims 2 and 19, "said step of positioning" (all in line 2), and "said tips" (all in line 3) should be -- said positioning --, and -- said probes --, respectively.

b/ in claims 6 and 20, all in line 1, "probe" should be -- probes --.

c/ in claim 18, "said electronic device" (line 4), and "an electronic device" (line 5) should be -- an electronic device --, and -- said electronic device --, respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4, 7-10, 13-14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Montoya (U.S.P. 5,773,987).

As to claim 1, Montoya discloses, in Fig. 5, a method of probing an electronic device (112), said electronic device (112, Fig. 4) comprising a surface and a plurality of terminals (63, Fig. 6), said method comprising: positioning (steps 42-44) said electronic device (112) and a plurality of probes (122) such that said probes (122) are adjacent ones of said terminals (63); and effecting relative movement (steps 46-50) of said electronic device (112) and said probes (122) to bring said ones of said terminals (63) into contact with said probes (122), wherein said relative movement (steps 46-50) comprises a component (i.e., x and y components) that is parallel to said surface of said electronic device (112).

As to claim 4, Montoya discloses in Fig. 6, said terminals (63) comprise flat pads.

As to claim 7, Montoya discloses in Fig. 5, said relative movement (steps 46-50) further comprises a component (i.e., z component) that is perpendicular to said surface of said electronic device (112).

As to claim 8, Montoya discloses in Fig. 5, testing (step 54) said electronic device (112) while said probes (122) are in contact with said ones of said terminals (63).

As to claim 9, Montoya discloses in column 4, lines 9-10, said electronic device (112) comprises a semiconductor device.

As to claim 10, Montoya discloses in column 4, lines 9-10, said electronic device (112) comprises a semiconductor wafer.

As to claim 13, Montoya discloses in column 4, lines 9-10, said electronic device (112) comprises a semiconductor die.

As to claim 14, Montoya discloses in column 4, lines 9-10, said electronic device (112) comprises a plurality of semiconductor dies.

As to claim 18, Montoya discloses, in Fig. 5, a media containing machine-executable instructions for causing a controller to perform a method of controlling a probing machine, said probing machine comprising a chuck (110, Fig. 4), said method comprising: generating first signals (steps 42-44) to position an electronic device (112) and a plurality of probes (122, Fig. 4) such that said probes (122) are adjacent terminals (63, Fig. 6) of said electronic device (112) disposed on said chuck (110); and generating second signals (steps 46-50) effecting relative movement of said electronic device (112) and said probes (122) to bring said terminals (63) into contact with said probes (122),

Art Unit: 2829

wherein said relative movement (steps 46-50) comprises a component (i.e., x and y components) that is parallel to said surface of said electronic device (112).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 3-18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Cooper et al. (U.S. Pub. No. 2004/0130312 A1)

The applied reference has a common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claims 1 and 18, Cooper et al. discloses, in Fig. 12, a method of probing an electronic device (524), said electronic device (524) comprising a surface and a plurality of terminals (terminals), said method comprising: positioning (see paragraph [0049], lines 8-16) said electronic device (524) and a plurality of probes (508) such that said probes (508) are adjacent ones of said terminals (terminals); and effecting relative

Art Unit: 2829

movement (step 410) of said electronic device (524) and said probes (508) to bring said ones of said terminals (terminals) into contact with said probes (508), wherein said relative movement (step 410) comprises a component (horizontal movement component) that is parallel to said surface of said electronic device (524).

As to claim 3, Cooper et al. discloses in Figs. 11A-11C, said terminals (terminals) comprise elements (1104) raised above the surface of the electronic device (1102).

As to claim 4, Cooper et al. discloses in Figs. 13A-13C, said terminals (terminals) comprise flat pads (1204a, 1204b)

As to claim 5, Cooper et al. discloses in Figs. 11A-11C, said terminals (terminals) comprise partial spheres (1104).

As to claims 6 and 20, Cooper et al. discloses in Figs. 14A-14C, each said probes (508) comprises a plurality of tips.

As to claim 7, Cooper et al. discloses in paragraph [0050], lines 8-10, said relative movement (step 410) further comprises a component (vertical movement component) that is perpendicular to said surface of said electronic device (524).

As to claim 8, Cooper et al. discloses in Fig. 12, testing (step 412) said electronic device (524) while said probes (508) are in contact with said ones of said terminals (terminals).

As to claim 9, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a semiconductor device.

As to claim 10, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a semiconductor wafer.

Art Unit: 2829

As to claim 11, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a package for a semiconductor device.

As to claim 12, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a package for a plurality of semiconductor devices.

As to claim 13, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a semiconductor die.

As to claim 14, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a plurality of semiconductor dies.

As to claim 15, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a printed circuit board.

As to claim 16, Cooper et al. discloses in paragraph [0029], said electronic device (524) comprises a ceramic space transformer.

As to claim 17, Cooper et al. discloses in paragraph [0029], said electronic device comprises: a wiring board; and a plurality of semiconductor devices electrically connected to said wiring board.

Allowable Subject Matter

11. Claims 2 and 19 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2 and 19 recite, inter alia, wherein said ones of said terminals extend from said surface of said electronic device by a distance "d," and said positioning said

Art Unit: 2829

electronic device and a plurality of probes comprises positioning contact portions of said probes less than said distance "d" from said surface of said electronic device.

The art of record does not disclose the above limitations, nor would it be obvious to modify the art of record so as to include the above limitations.

Conclusion


12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kim et al. US 2004/0201392 A1 Alignment Features In A Probing Device

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh N. Tang whose telephone number is (571) 272-1971. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (571) 272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


MINH NHUT TANG
PRIMARY EXAMINER
5/25/05